

Isinglass Annual Water Use versus Stream Flow – Calendar Year 2003

The Isinglass Water Management Planning Area covers 74 square miles and includes a streamflow gage (USGS 01072870 ISINGLASS R AT ROCHESTER NECK RD, NR DOVER, NH.) However, this gage provides real time data only and does not record streamflow data. Streamflow estimation for the Isinglass was made using four nearby gages-- USGS 01073000 OYSTER RIVER NEAR DURHAM, NH with a watershed area of 12.1 square miles USGS 01073587 EXETER RIVER AT HAIGH ROAD, NEAR BRENTWOOD, NH with a watershed area of 63.5 square miles USGS 01072800 COCHECO RIVER NEAR ROCHESTER, NH with a watershed area of 85.7 square miles, and USGS 01073500 LAMPREY RIVER NEAR NEWMARKET, NH with a watershed area of 183 square miles. Average monthly streamflow was converted to cfsm and these values were averaged for the four gages. The average cfsm was then applied to the Isinglass WMPA. For this report the averaged streamflow was transposed areal to all impact points on the Designated River. There are 2 registered sources and no registered, measured returns in the Water Management Planning Area.

The Isinglass Designated Reach was not in compliance with the General Standard during any part of 2003 from the confluence with Berry River to the end of the Designated River. It must be noted however that this conclusion is drawn from surrogate gages defining stream flow and from estimated water use. Water use estimate for Rochester's withdrawal from Berry River is based on the watershed area of the diversion dam which is 8.7 square miles. Water is diverted behind this dam to a two-foot pipe¹ that feeds by gravity drainage to Rochester Reservoir. Stream flow for this drainage area was estimated based on prorating the monthly streamflows in the nearby Oyster River. Flow estimates for a two-foot diameter concrete pipe were made using Chazy-Mannings equation with any stream flow in excess of this amount assumed to overtop the dam. This matches Department staff observation that all the water above the dam is diverted at lower flows. Despite the approximations of this assessment process, the amount of the exceedence is of such magnitude, that the conclusion is correct, while the magnitude remains an estimate.

The Water Management Planning Area has no hydropower facilities. Water use is entirely for public water supplies for the cities of Rochester and Dover. Rochester diverts water from the Berry River tributary into a reservoir outside of the Water Management Planning Area. Dover withdraws water directly from the Isinglass River from a location near the end of the Designated River.

Isinglass River Affected Water User Facilities: Source and Discharge Locations

Legend

Affected Water Users

● Source

● Discharge

Stream Gages

▲ Active

△ Inactive

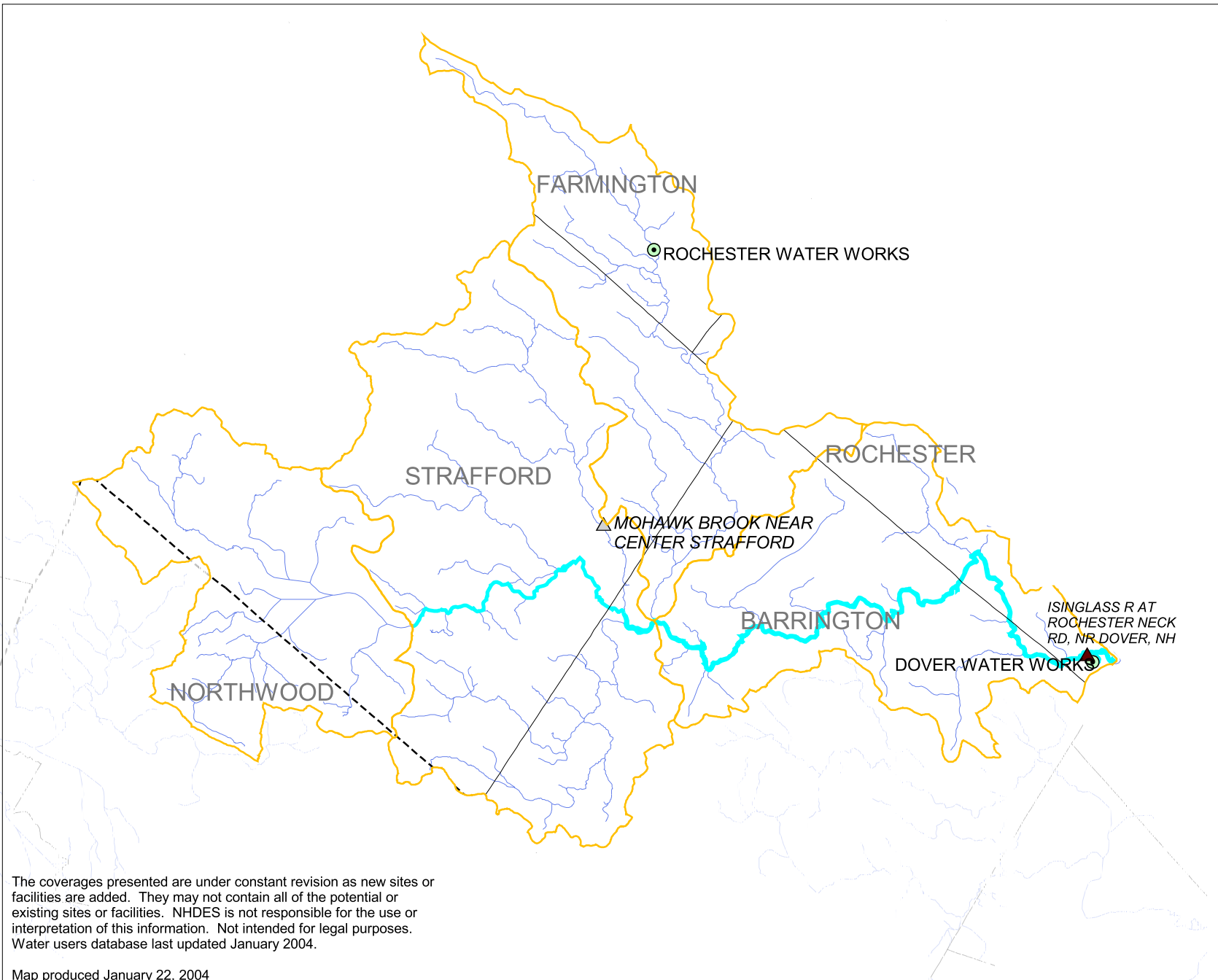
Designated Reach

Hydrology

State boundary

Town boundary

WMPA



The coverages presented are under constant revision as new sites or facilities are added. They may not contain all of the potential or existing sites or facilities. NHDES is not responsible for the use or interpretation of this information. Not intended for legal purposes. Water users database last updated January 2004.

Map produced January 22, 2004

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0 1 2 Miles

2003 Isinglass Water Use in CFS

[illegible]

2003 Isinglass Aggregate Water Use in CFS

WU_NAME	FACILITY	WUSD_ID	DA on DR (SQ												DEC
			MILE)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	
Start DR	Bow Lake		14.26	0	0	0	0	0	0	0	0	0	0	0	0
Berry River			57.29	13.578	15.493	31.569	31.569	17.629	8.951	3.534	2.431	4.693	6.686	15.800	15.610
DOVER WATER DEPARTMENT	WATER WORKS	20006 20006-S09	73.71	16.920	18.835	34.911	34.911	20.970	11.861	3.534	2.431	4.693	7.642	19.030	18.738
End Point DR	Confluence Isinglass and Coheco		73.84	16.920	18.835	34.911	34.911	20.970	11.861	3.534	2.431	4.693	7.642	19.030	18.738

ISINGLASS RIVER

DA(mi^2) 73.8
7Q10 (cfs) 2.5 *

Mean of daily streamflows (2003) in cfs

	USGS 01073000 OYSTER RIVER NEAR DURHAM, NH	USGS 01073587 EXETER RIVER AT HAIGH ROAD, NEAR BRENTWOOD , NH	USGS 01072800 COCHECO RIVER NEAR ROCHESTER, NH.	USGS 01073500 LAMPREY RIVER NEAR NEWMARKET , NH	Calculated 2003 monthly mean streamflow in CFSM	General Standard in cfsm
Jan-03	17	89	143	198	1.39	0.04
Feb-03	21	128	158	161	1.62	0.04
Mar-03	60	289	366	799	4.54	0.16
Apr-03	45	240	314	712	3.76	0.04
May-03	21	112	181	337	1.87	0.04
Jun-03	12	78	82	220	1.09	0.04
Jul-03	2	9	20	32	0.17	0.0017
Aug-03	3	24	40	80	0.39	0.0017
Sep-03	5	13	40	53	0.35	0.0017
Oct-03	16	49	133	206	1.18	0.04
Nov-03	18	86	147	338	1.59	0.04
Dec-03	28	152	286	498	2.69	0.04
Gage area in sq. miles	12.1	63.5	85.7	183		

Using POR average streamflow for this month
Using

* Determined by averaging values from the Oyster River and Lamprey River gages.

2003 Isinglass Estimated Monthly Stream Flow at Each Impact Point in CFS

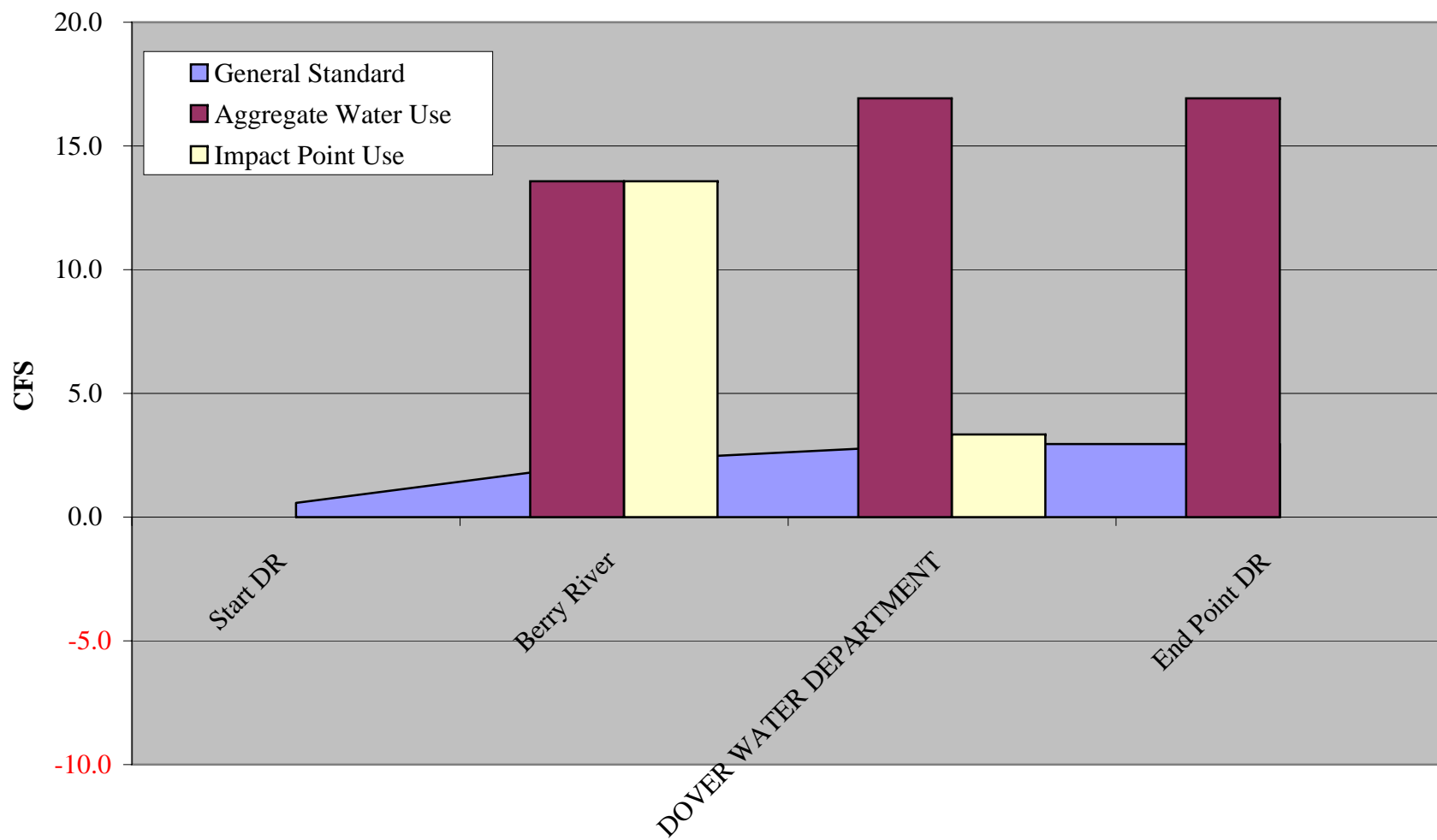
WU_NAME	FACILITY	WUSD_ID	DA on DR (SQ MILE)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Start DR	Bow Lake		14.26	19.8	23.0	64.7	53.6	26.7	15.6	2.4	5.6	5.0	16.9	22.7	38.4
Berry River			57.29	79.5	92.5	260.1	215.2	107.2	62.5	9.7	22.4	19.9	67.8	91.2	154.3
DOVER WATER DEPARTMENT	WATER WORKS	20006 20006-S09	73.71	102.3	119.1	334.6	276.9	137.9	80.4	12.5	28.8	25.7	87.2	117.3	198.5
End Point DR	Confluence Isinglass and Cocheco		73.84	102.5	119.3	335.3	277.4	138.2	80.6	12.6	28.9	25.7	87.4	117.5	198.9

2003 Isinglass Estimated Monthly General
Standard at Each Impact Point in CFS

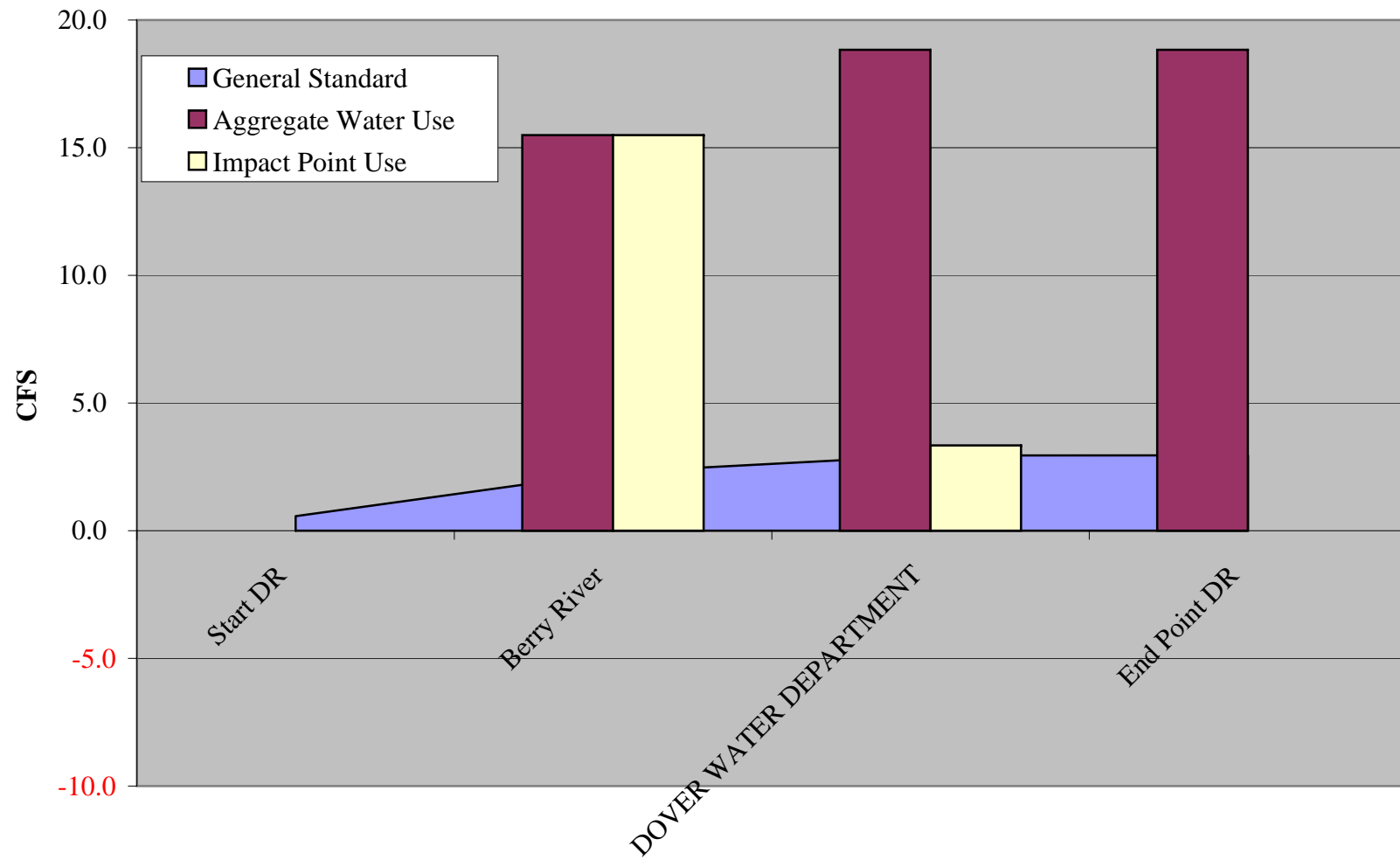
WU_NAME	FACILITY	WUSD_ID	MILE)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Start DR	Bow Lake			14.26	0.57	0.57	2.28	0.57	0.57	0.57	0.02	0.02	0.02	0.57	0.57
Berry River				57.29	2.29	2.29	9.17	2.29	2.29	2.29	0.10	0.10	0.10	2.29	2.29
DOVER WATER DEPARTMENT	WATER WORKS	20006 20006-S09		73.71	2.95	2.95	11.79	2.95	2.95	2.95	0.13	0.13	0.13	2.95	2.95
End Point DR	Confluence Isinglass and Cocheco			73.84	2.95	2.95	11.81	2.95	2.95	2.95	0.13	0.13	0.13	2.95	2.95

2003 Isinglass Estimated Monthly Margin of the Aggregate Water Use Below the General Standard in CFS															
WU_NAME	FACILITY	WUSD_ID	DA on DR (SQ MILE)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Start DR	Bow Lake		14.26	0.57	0.57	2.28	0.57	0.57	0.57	0.02	0.02	0.02	0.57	0.57	0.57
Berry River			57.29	(11.29)	(13.20)	(22.40)	(29.28)	(15.34)	(6.66)	(3.44)	(2.33)	(4.59)	(4.39)	(13.51)	(13.32)
DOVER WATER DEPARTMENT	WATER WORKS	20006 20006-S09	73.71	(13.97)	(15.89)	(23.12)	(31.96)	(18.02)	(8.91)	(3.41)	(2.30)	(4.57)	(4.69)	(16.08)	(15.79)
End Point DR	Confluence Isinglass and Cocheco		73.84	(13.97)	(15.88)	(23.10)	(31.96)	(18.02)	(8.91)	(3.41)	(2.30)	(4.57)	(4.69)	(16.08)	(15.78)

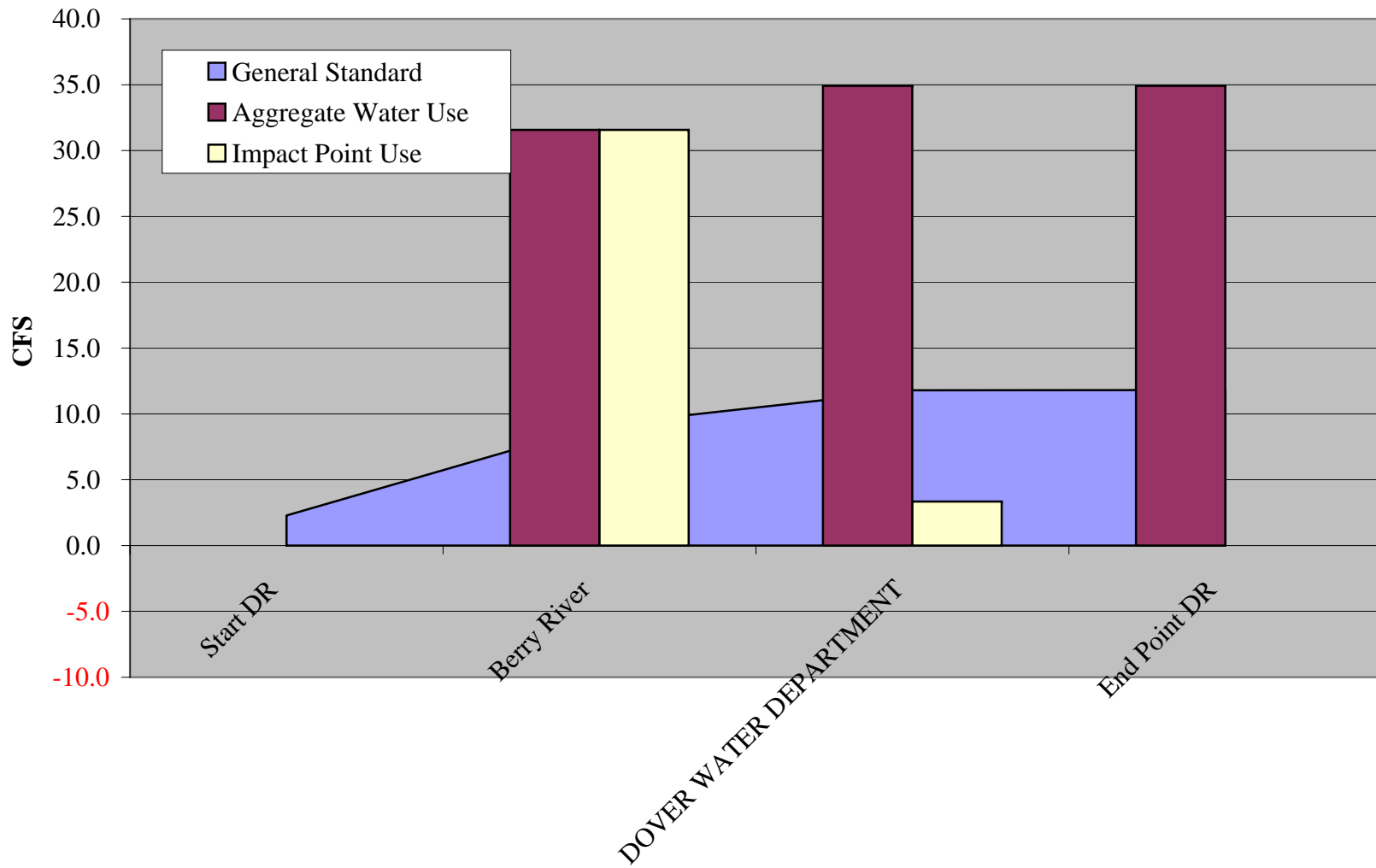
January 2003 Isinglass



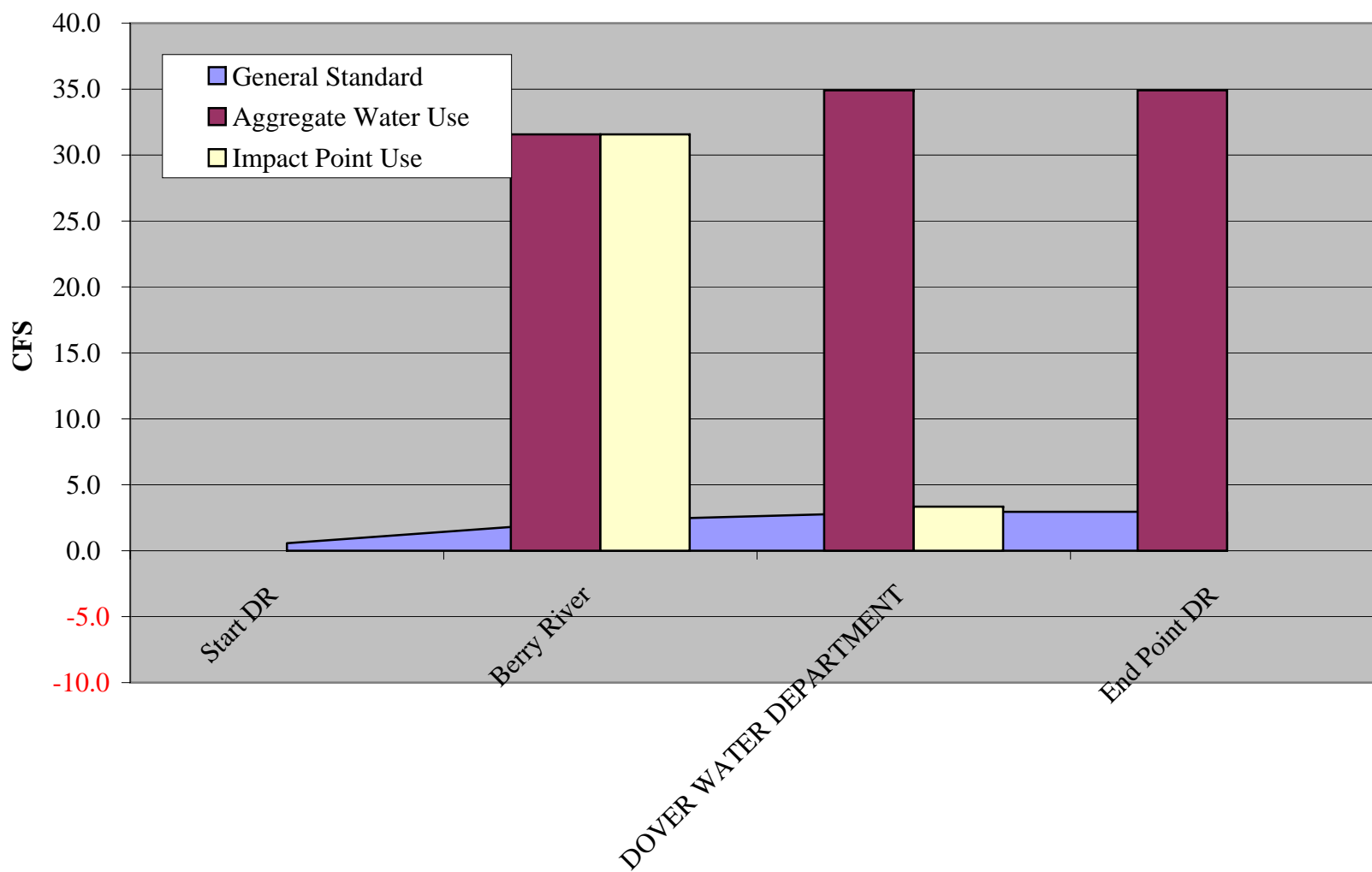
February 2003 Isinglass



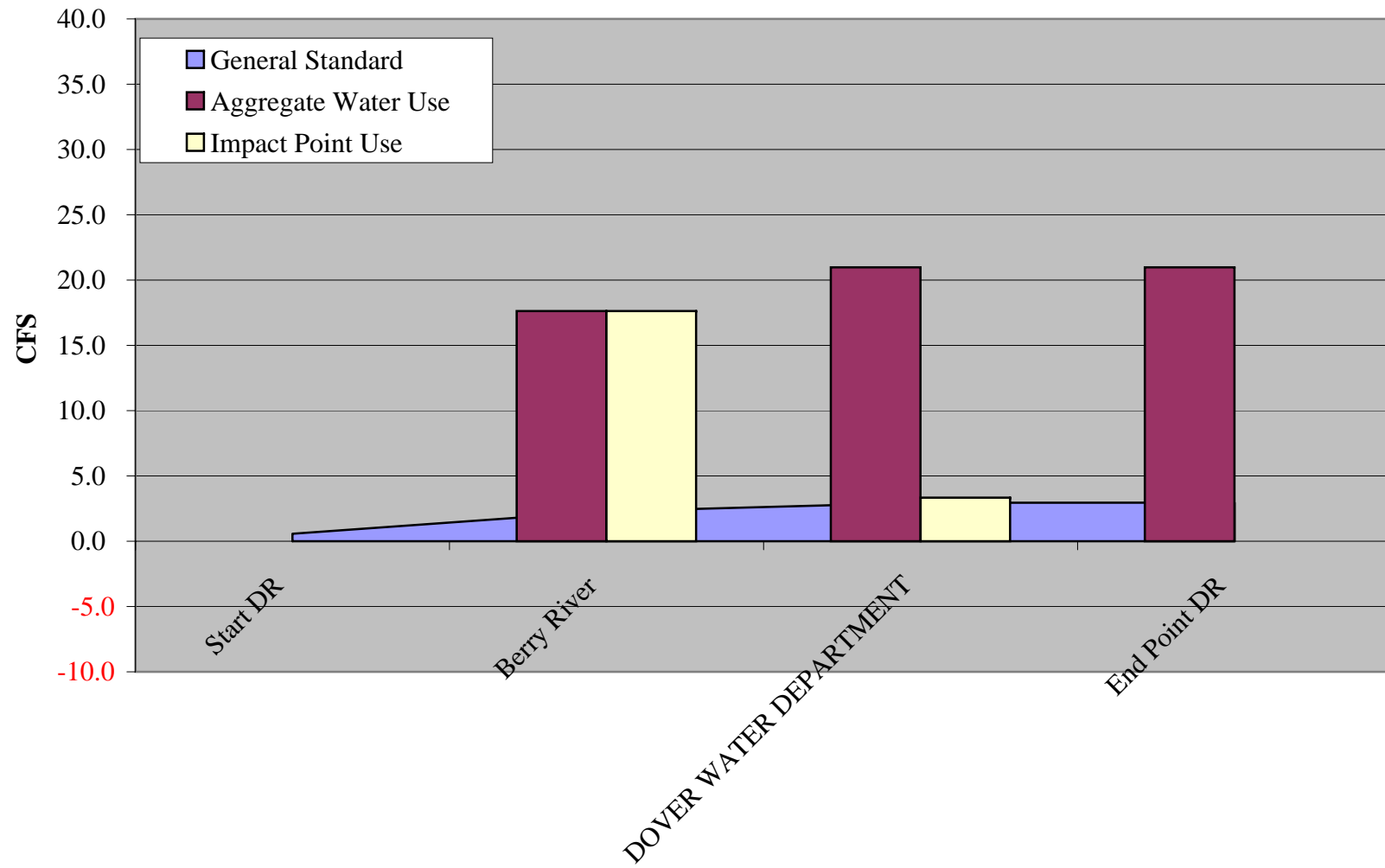
March 2003 Isinglass



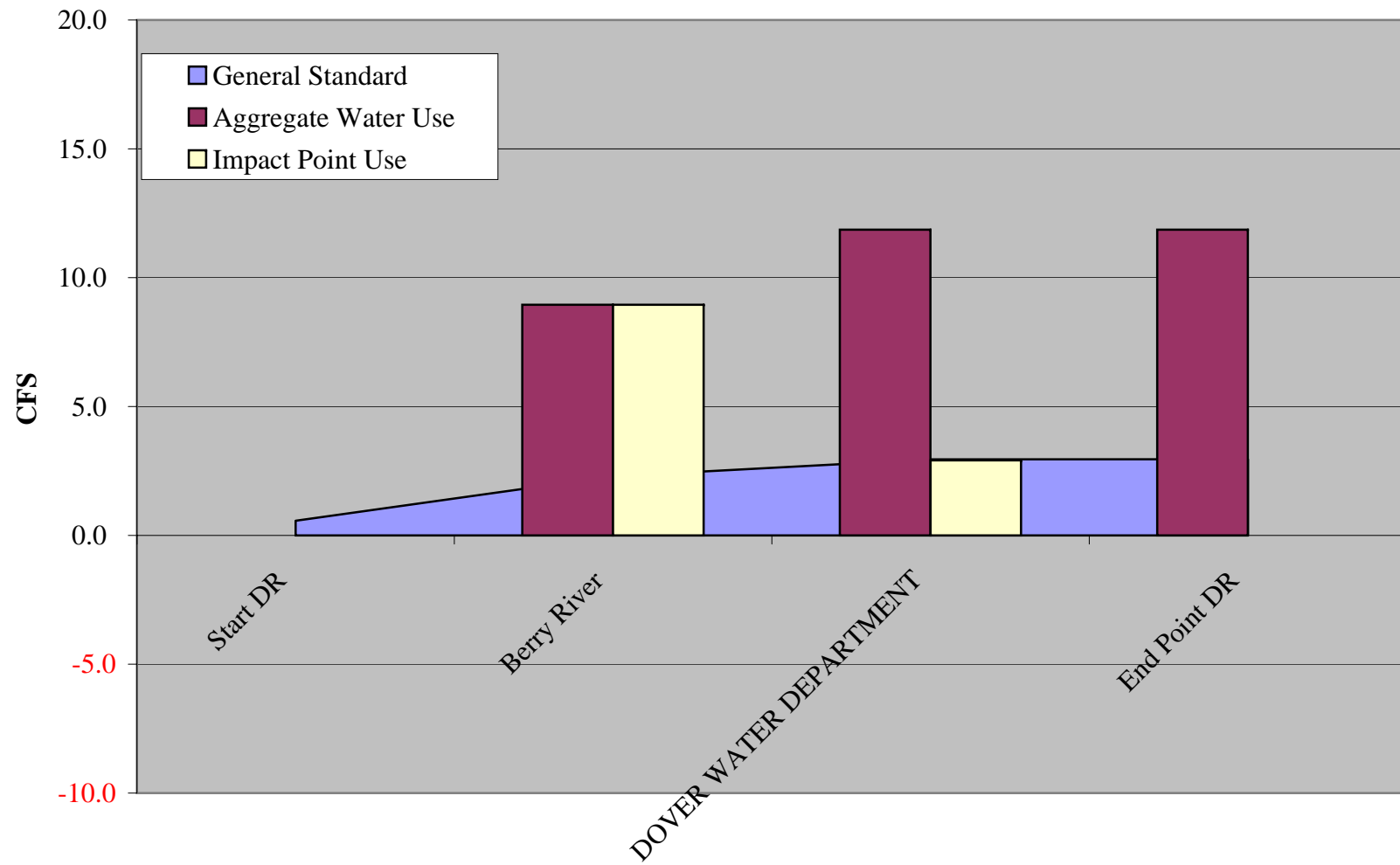
April 2003 Isinglass



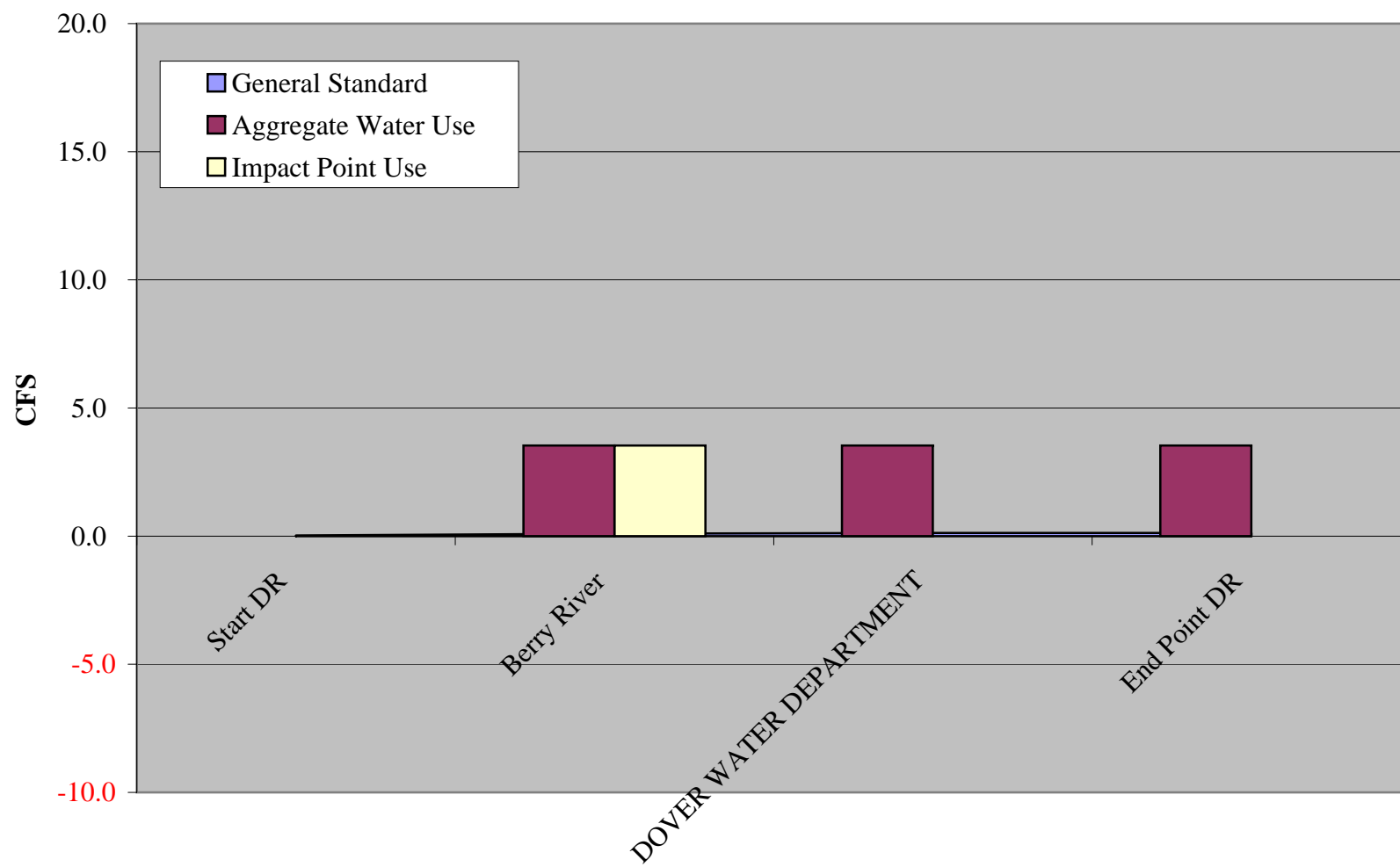
May 2003 Isinglass



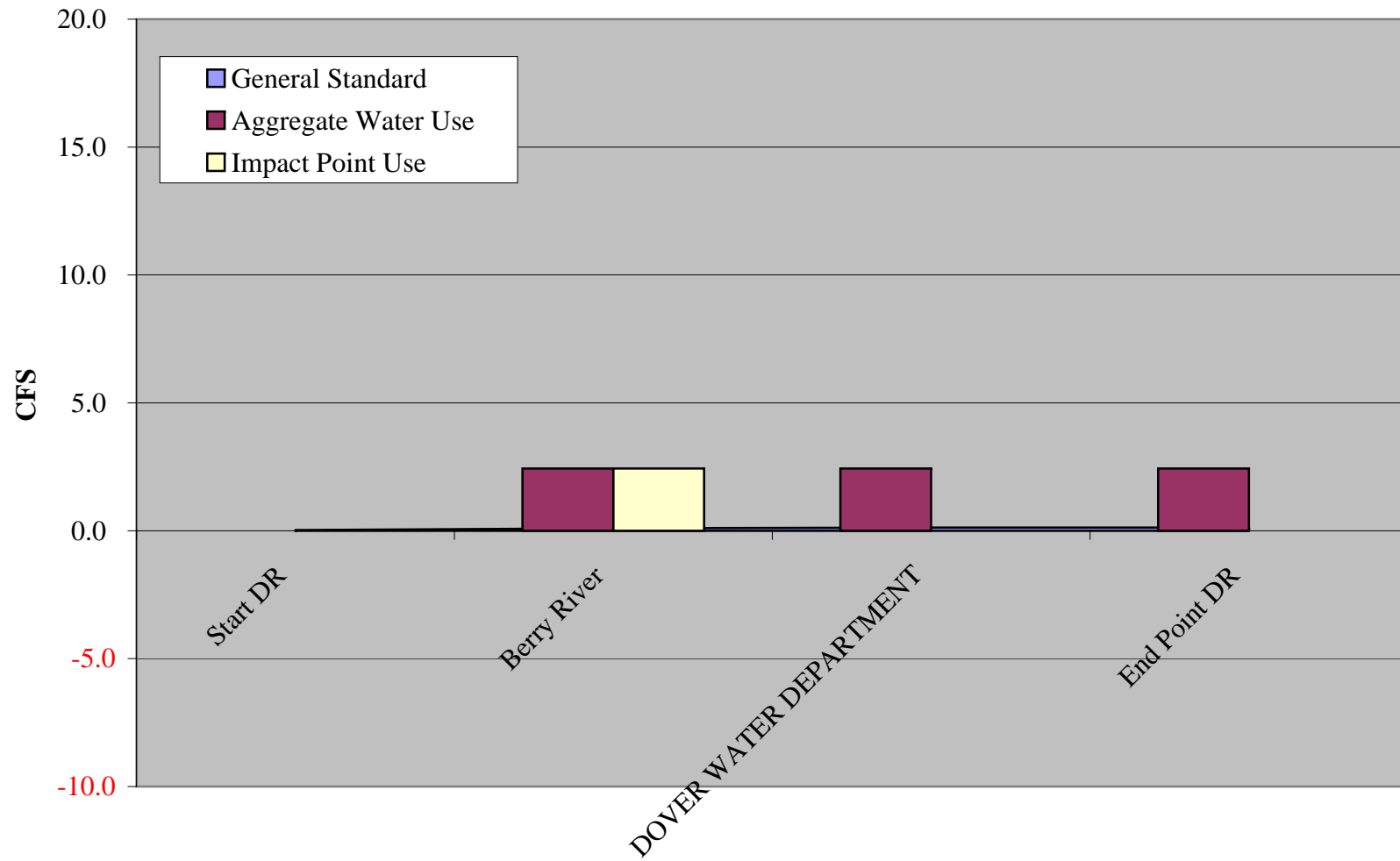
June 2003 Isinglass



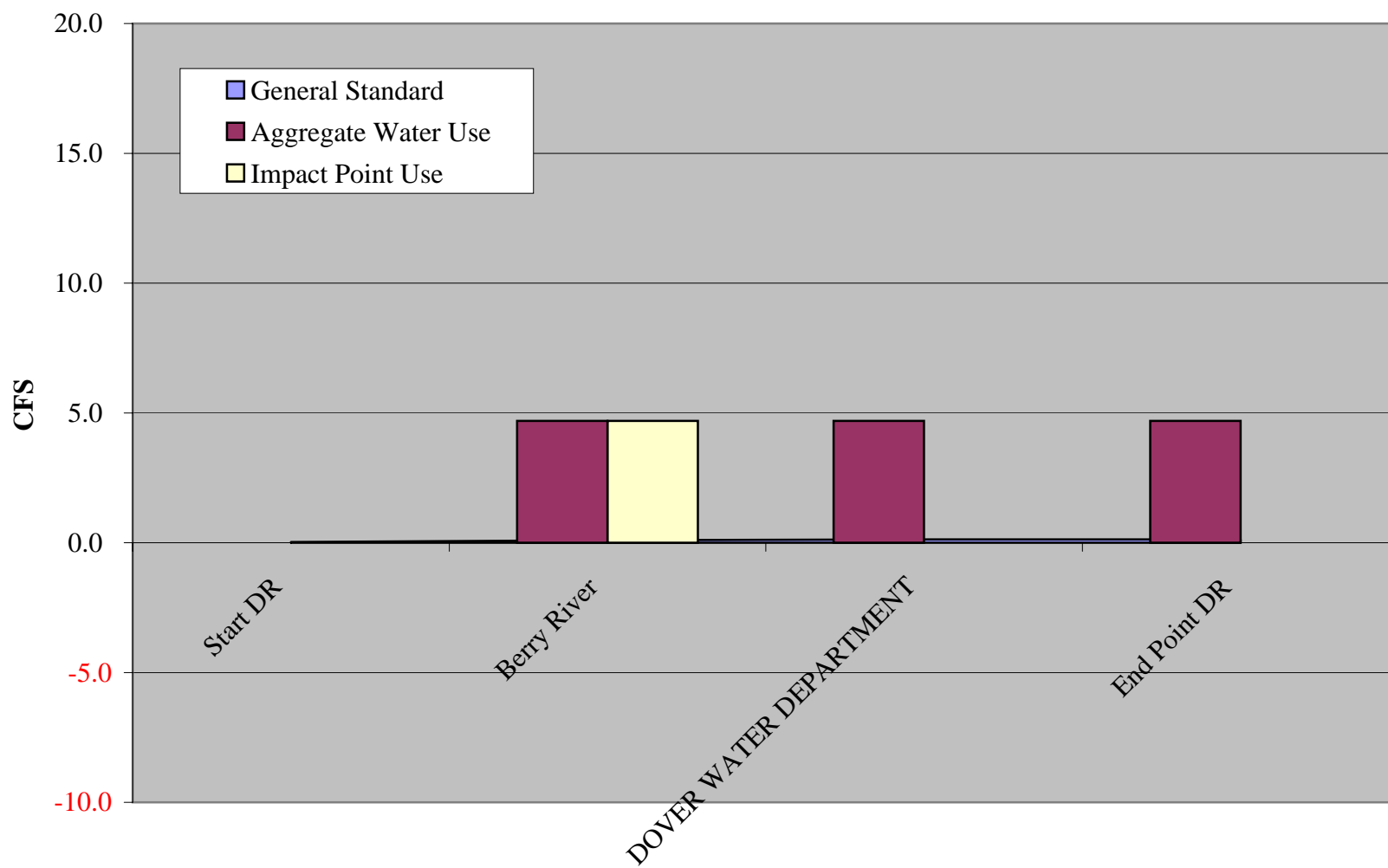
July 2003 Isinglass



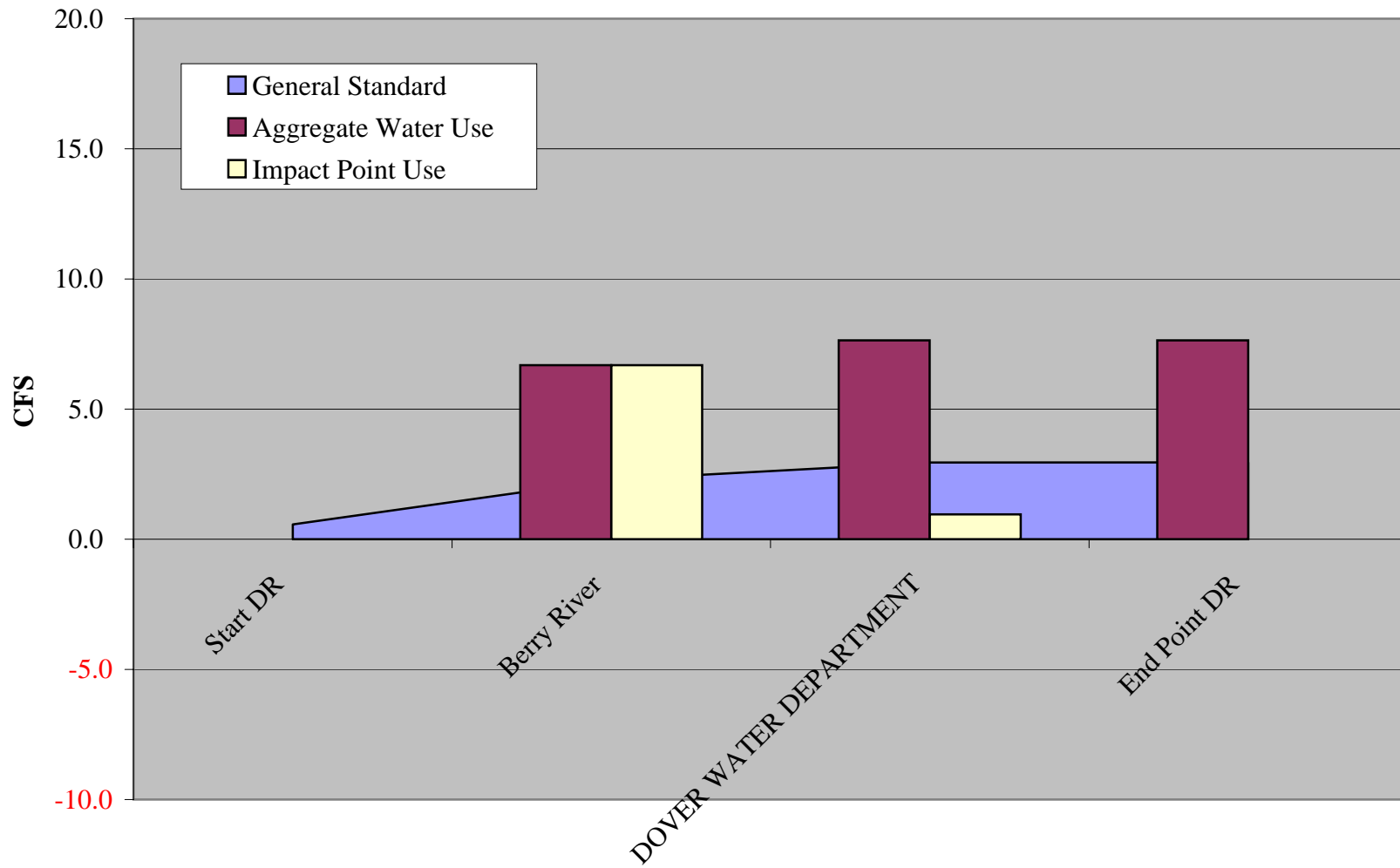
August 2003 Isinglass



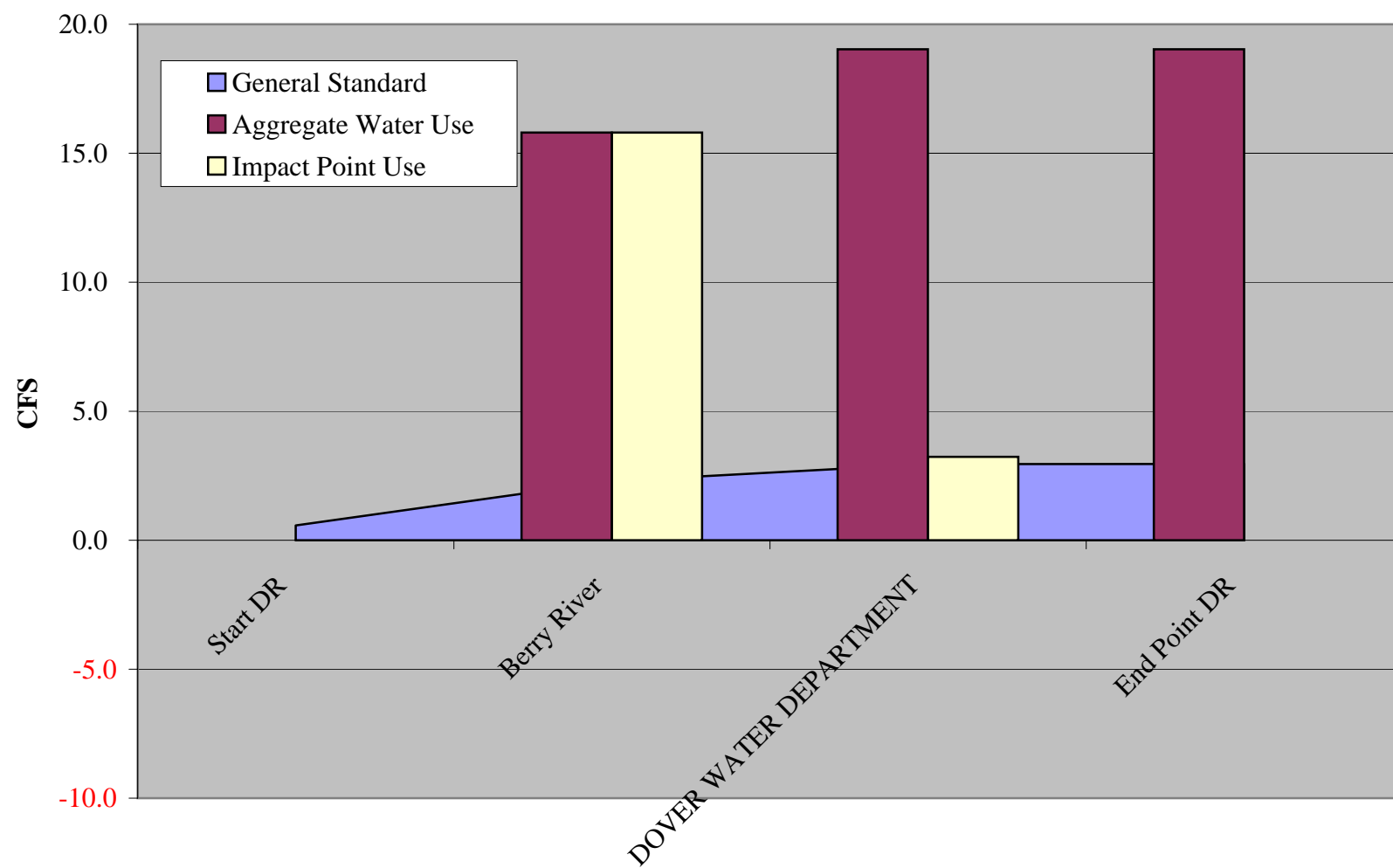
September 2003 Isinglass



October 2003 Isinglass



November 2003 Isinglass



December 2003 Isinglass

